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REMARKS

1. Claims 1-7, 9-15, 32, and 34-51 remain unchanged in this amendment.

Claims 1-7, 9-11, 32, 34-43 and 50-51 were rejected under the provisions of 35 U.S.C. 103(a) as being unpatentable for obviousness over Gardner et al. (US Patent No. 4,554,218). Applicants respectfully traverse this rejection with the following arguments.

Applicants acknowledge as stated in the this Office Action that Gardner et al. discloses a powder mixture for forming molded composite articles using steel powders, tungsten powders, and polymer binders. Applicants argue however, that the example cited in Gardner et al. does not teach anything close to the compositions claimed in claim 1 of this application. In particular Applicants argue that there has been a misreading of what Gardner et al. teaches with respect to polymer binder compositions.

By way of background, the present application claims low levels of binder composition. This aspect is discussed in the background section of the instant application on page 5 beginning on line 19:

"The trend has been to use more polymer binder materials as one approach to achieve higher green strength parts. However, as the amount and complexity of binders used in these metal and/or ceramic polymer composite powders has increased, it has been increasingly difficult to removing (sic) all of the polymer system binders during the decomposition and burn-out phase. The decomposition of the polymer into smaller fragments should be complete enough to ensure that the bulk of the hydrocarbon fragments can escape the article skeleton before the infiltrating metal (copper or bronze, for example) enters the skeleton. If all of the hydrocarbon fragments do not escape, the interconnectivity of pores in the resulting metal part is decreased and outgassing is hampered as the interpassages become blocked by trapped hydrocarbon fragments leading to a phenomena of blistering on the surface and potential delamination of the final article. In some systems the presence of too much residual carbon can also impede the infiltration process."

Claim 1 of the instant application thus limits the binder composition via:

"a polymeric binder from about 1.25 to about 2.25 percent by weight;".

Applicants respectfully submit that the teaching of the Gardner et al. reference is not in this range.

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The teaching example (Example 2) cited by the Office Action (column 16, lines 50-60) specifically teaches 57 grams of binder, which is 5.4% by weight. It is argued in the Office Action that Gardner et al. is actually referring to a thermoplastic-thermoset binder mixture mentioned in column 8, lines 62-66 that is only 0.296 binder, therefore rendering the actual polymeric binder composition as $5.4\% \times .296 = 1.6\%$. The example simply cannot be read that way. Column 8 has at least ten different examples given of potential binder systems. It is simply incorrect to try to read a specific one into Example 2. Moreover, the binder system alleged by the Office Action to be in Example 2 is simply incorrect.

The teaching example (Example 2 column 16) simply says 57 grams polymer binder without defining the binder. There is no reference anywhere that the binder is the specific one mentioned in column 8, lines 62-66. The only way a person skilled in the art could read a particular binder into this example is to read into the first sentence of the example ("Using the method of Example 1...") that Example 2 is using the same binder as Example 1. But Example 1 clearly specifies that its binder is Emerest 2642 – which is defined in column 8 lines 35-36 as a polyethelene glycol distearate – which is a thermoplastic, not a thermoplastic-thermoset.

Even if the Gardner et al. reference had specifically called out the binder described in column 8, lines 62-66, which it did not, that example is not only 29.6 parts binder. The text clearly reads it is instead 29.6 parts "Epon" epoxy resin thermoset binder material, 9.1 parts "Epi-cure" curing agent, and 29.25 parts "Carbowax" thermoplastic binder material, with 35.75% diluent. The thermoplastic-thermoset binder materials comprise 56.78% of the mixture, not merely the 29.6% thermoset material alleged in the Office Action. So the binder composition is actually 56.78% binder and 34.49% diluent (plus 8.73% curing agent). Using the Office Action's logic for Example 2, that would result in $5.4\% \times .5678 = 3.01\%$ binder. This is well outside the claim 1 limitation.

Applicants respectfully submit that Gardner et al. is not a 103(a) reference for the above-cited reasons and is an impermissible attempt to apply incomplete portions of a reference in hindsight to reconstruct Applicants' claimed invention. Therefore reconsideration and withdrawal of the rejection are respectfully requested.

2. Claims 12-13, 32, 45-46 and 49 were rejected under the provisions of 35 USC § 103(a) as being unpatentable for obviousness over Gardner et al. in view of Bray et al. for the polymer binder of Gardner et al. Applicants respectfully traverse this rejection.

For the reasons stated above, Gardner et al. is not an appropriate teaching of the claimed invention and is improperly applied to the independent claims and

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their dependent claims. Accordingly reconsideration and withdrawal of the rejection are respectfully requested.

3. Claims 14-15 and 47-48 were rejected under the provisions of 37 USC 103(a) as being unpatentable for obviousness over Gardner et al. in view of Luk, alleging it was obvious to combine a conventional flow agent with Gardner to obtain the claimed function. This rejection is respectfully traversed.

Again, for the reasons stated above, Gardner et al. is not an appropriate teaching of the claimed invention and is improperly applied to the independent claims and their dependent claims. Accordingly reconsideration and withdrawal of the rejection are respectfully requested.

4. In summary, claims 1-7, 9-15, 32 and 34-51 remain in the application. Minor corrections have been made to pages 5 and 13 of the specification.

It is submitted that the application requires no further searching, and is in condition for allowance following and responding to the issues raised in the subject Office Action. Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Pursuant to currently recommended Patent Office practice, the Examiner is expressly authorized to call the Applicant's attorney collect at Valencia, California, if in her judgment disposition of this application could be expedited or if she considers the application not ready for examination or final disposition by other than allowance.

Respectfully submitted,

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